ART. VII. *Account of a successful Operation for the cure of Artificial Anus, accomplished with the aid of a novel instrument, and performed by* J. R. LOTZ, M. D., of New Berlin, Union County, Pennsylvania, with *Observations on the Apparatus, &c., by* REYNELL COATES, M. D.

Since the first successful attempt at the cure of artificial anus, which was made by Dr. Physick in the celebrated case of John Axillius, in 1809, the operation has not been employed, to our knowledge, on this side the Atlantic, until within a few months; and though several instances occurred in the practice of the late M. Dupuytren, the methods or rather the instruments employed by him, have varied from time to time, and the number of observations yet accumulated is too small, fully to establish the superior claims of either over the plan of Dr. Physick. In this attitude of the subject, the following account of a case cannot fail to be highly interesting to surgeons. It is condensed from a letter from Dr. J. R. Lotz of Union County, to Professor Gibson, dated June 24th, 1835, which, with the newly contrived enterotome employed in the operation, has been kindly submitted to my inspection by the latter, with the assent of the author to the publication of such parts as possess general interest.

CASE. Dr. L. was called, sometime in February last, to see Mrs. ——, aged 41 years, at a distance of eight miles from his residence. The physicians in attendance informed him that their patient had laboured under strangulated hernia for a week, and that all the usual remedies for the relaxation of the stricture had been tried in vain. A tobacco enema had been given a short time before the doctor arrived, and the system of the patient was much prostrated by it, but the stricture did not yield.

The usual operation was performed as speedily as possible under the circumstances. Both the sac and the intestine were "found full of holes," and in a complete state of mortification. The stricture at the external ring was very firm. It was divided in the usual way, with the blunt pointed bistoury, guided by the grooved director, the incision being carried directly upward. *A portion of the intestine was then drawn out,* all of which looked as if it might slough off. After consultation, the mass of the mortified portion of bowel was removed by the knife, and the sound extremities of the intestine were left in the external wound, anteriorly to the ring. No dilatation of the internal ring was required or performed.

Dr. L. was requested to visit the patient again in one week after the operation. He found that the remaining dead portions of intestine had sloughed off, and the wound was in a healthy condition. Moderate pressure over the ends of the bowel was recommended, and the case was left, in other respects, to nature.

About three weeks afterward, he was requested to visit the patient with his friend Dr. Thomas Von Volzoh. They found her general health improved. The acrimony of the fœcal discharge had excoriated the groin, but no complaint was made of pain from any other cause. The long tent of Dessault was tried, but without benefit. At the next visit, the ligature of Dr. Physick was proposed, but was rejected on account of the difficulty of its application, owing to the curvature of the two portions of the bowel. *The rectal portion* "was at this time considerably protruded."

Dr. Lotz now proposed the construction of a new instrument which he thought would enable him to re-establish the continuity of the canal between the two extremities of the intestine, more readily and securely than the ligature of Dr. Physick. His invention was modelled by an ingenious gunsmith of the neighbourhood, and before proceeding to the account of the mode and result of its application, it is necessary to describe the instrument, which is highly creditable to the inventor, when his distance from professional instrument makers is considered. But it is susceptible of some simplifications which will render it even more available, and which could not be executed in time to appear with the present publication, already too long delayed.

The accompanying figure will give a very correct idea of the general form of the instrument without further description. The two fenestræ are about an inch in length, and a quarter of an inch in breadth, surrounded by a solid rim about a line in thickness. The whole instrument is about six inches in length, and from these data the other dimensions may be readily deduced.

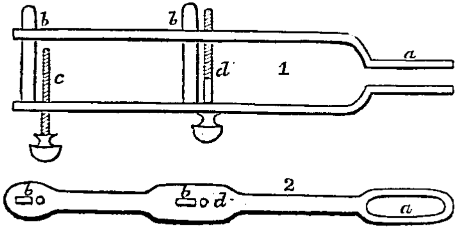

Fig. 1, A side view of the instrument of Dr. Lotz.

a, The rims of the fenestræ, seen in side view.

b b, The slides; *c*, The adjusting screw.

d, The pressure screw.

Fig. 2, A front view of the same.

a, The fenestræ; *b b*, The mortice holes for the slides.

d, The hole for the passage of the pressure screw.

They are articulated in the following manner. At the upper end (that which in forceps corresponds with the joint,) and again in the middle of one of the blades, there are attached two steel slides which play loosely through mortice holes cut in the corresponding parts of the other blade. Near each of these slides is a screw; that at the lower end passes through one blade, and simply presses on the other, acting in such a manner as to regulate the distance of the blades from each other, while that in the centre of the instrument (*d*) passes through both blades, approximates them, and causes the edges of the fenestra to press against each other.

The mode of application is this. The central screw being removed, the blades are entirely detached. One of them is inserted into each of the intestinal extremities in this condition, and the slider (*b*, *b*) being introduced into the mortice holes, the surgeon is assured that the fenestra are equidistant from the orifice. The central screw is now introduced, and the adjusting screw having been previously turned far enough to allow for the thickness of the double walls of intestine included between the pinching extremities, the central screw is tightened until the edges of the fenestra press firmly upon the intervening membranes. By unscrewing the adjusting screw and tightening the central one, the pressure can be increased to any requisite degree without destroying the parallel direction of the blades.

This instrument having been constructed, it was applied upon the patient in the manner described, and tightened until the circulation was supposed to be arrested in the parts included by the pinching extremities. It had been the intention of Dr. Lotz to cut out immediately the portion of intestine included between the fenestra, but as the instrument occasioned some pain and sickness, he desisted from the attempt lest he might be subsequently compelled to remove the instrument before the adhesions were completed; he left the patient with directions that the adjusting screw should be loosened and the pressure screw tightened by half a turn each day.

This operation was performed on a Thursday. On the following Sunday the doctor saw the patient again. The physician in attendance stated that the pain had subsided shortly after the last visit, and that she had continued comfortable ever after. Dr. Lotz then introduced the index finger of his left hand into the extremity of the bowel, while with his right he carried a gum lancet into the other extremity. In this way he safely excised all the portion of bowel corresponding with the fenestræ, and established a direct communication between the two ends of the intestine. He now ordered the instrument to be loosened from day to day in the same gradual manner in which it had been previously tightened, and at his next visit, on Wednesday, he removed it altogether, and examined the result of the operation.

"I can scarcely describe to you," he says, "my gratification, when, upon examination, I found a smooth round hole about the dimensions of an inch, with the bowel, firmly adherent all around. By introducing my finger into the bowel next the stomach, I could with the greatest facility pass it through the opening, *and up through the abdominal ring.*"

Laxative enemata, a diet of rye mush, and, after a few days, more drastic enemata were prescribed, which soon caused about half the feces to pass by the rectum. A few days before the date of the letter, the doctor found her in excellent health, getting fatter daily, and discharging nearly all her feces by the natural passage. "One matter," he remarks, "operates against her yet—she is now in about her seventh month of utero-gestation, which opposes a considerable obstacle to the return of the feces *through the abdominal ring.* When she is safely conducted through her confinement, I shall make an attempt to heal the opening in the ends of the bowels, and make her whole. Of my ability to effect that object I have not the slightest doubt."

Remarks.—This instrument appears to be a valuable substitute for the enterotome of Dupuytren. It is certainly very preferable to the *original instrument* of that surgeon, being possessed of all its advantages, while it secures the cavity of the abdomen from all danger of a breach of integrity without necessarily producing such extended and violent irritation as must result from the process of that surgeon. It may be applied with more facility and is apparently more definite and certain in its action than the original ligature or suture employed by Dr. Physick, particularly when the patient is in the hands of a maladroit or inexperienced surgeon.

The action of the instrument, in the case narrated by Dr. Lotz, was exceedingly happy, as is proved by the slight degree and short continuance of the pain resulting from the pressurè, and also by the roundness of the orifice formed by the incision. But it is not improbable that the pressure of any such contrivance, however carefully employed, will occasionally produce the dangerous symptoms observed so frequently in strangulations of small portions of the circumference of an intestine, which symptoms occurred even in the case of Axillius, when the ligature of Dr. Physick was drawn a little too tightly.

Dr. Lotz seems to have acted upon the principle, that a gradual increase of pressure is preferable to a sudden violence sufficient to destroy the vitality of the parts; for, although he directed the instrument to be tightened at first sufficiently to arrest the circulation in the parts included by the fenestræ, he also directed a daily increase of the pressure, which is obviously unnecessary, if the first purpose is once completely accomplished. If the pressure be made sufficient to arrest the circulation in the first instance, there seems no sufficient reason for removing the parts embraced by the instrument, as they might as well be permitted to pass away with the feces spontaneously.

There are two methods by which the required union of the two portions of the intestine, in artificial anus, may be accomplished; first, by very slight pressure, just sufficient to secure the adhesion of the opposite serous surfaces; and, secondly, by very firm pressure, which destroys the vitality of the parts at once. We have heard it suggested that the former of these methods should be adopted, in order to avoid the danger of symptoms of strangulation. Neither the instrument of Dupuytren nor that of Dr. Lotz is calculated to accomplish this purpose, because, in acting on living parts by mechanical contrivances, we never can depend upon the accuracy of our measurement of the force of the screw. But it is very questionable whether the simple adhesion would furnish a sufficient guarantee against subsequent accidents being composed of very extensible materials. In order that either of the methods just mentioned should be safely and effectually employed, it is necessary that the edges of the two fenestræ should remain at all times parallel to each other, and it is very desirable that they should press equally at all points. The double adjustment of the screws in the apparatus of Dr. Lotz may enable the surgeon to accomplish this purpose, when great care is used, but the necessity for frequently counting the half turns of the screws is a serious inconvenience; some better mode of measurement would be very desirable.

One great advantage possessed by this instrument, is its levity. A specimen of the original enterotome of Dupuytren in the cabinet of the Pennsylvania Hospital, weighs about two ounces—the apparatus of Dr. Lotz weighs nine and a half drachms. The two transverse sliders of the latter are common to it, and the improved enterotome of Dupuytren, according to descriptions of this contrivance, which I have never seen delineated. The improved Parisian instrument is said to be even heavier than the original one, and by a little mechanical skill it would be easy to dispense with the slides altogether, without rendering the apparatus unsteady, the screws themselves being made the only medium of connexion between the blades of legs of the instrument. Time will not permit me to present in the present number of this Journal the slight modifications which would reduce the instru-